

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method for quantifying at least one lengthwise shrinkage of a wood product, comprising:

obtaining at least one first data value indicative of a reactive force component to lengthwise shrinkage, the first data value obtained at a measuring location along the wood product;

obtaining at least one second data value indicative of a motive force component to lengthwise shrinkage, the second data value obtained at the measuring location along the wood product; and

determining lengthwise shrinkage of the wood product based on the first and second data values.

2. The method of Claim 1, wherein the reactive force component to lengthwise shrinkage is stiffness.

3. The method of Claim 2, wherein the first data value is a modulus of elasticity measurement.

4. The method according to Claim 2, wherein the first data value is an acoustic energy measurement.

5. The method of Claim 4, wherein the acoustic energy measurement is a sound velocity measurement.

6. The method of Claim 1, wherein obtaining a first data value indicative of a reactive force component to lengthwise shrinkage includes:

sending an ultrasound pulse through the wood product; and

measuring the transmission speed of the ultrasound pulse through the wood product.

7. The method of Claim 1, wherein obtaining a first data value indicative of a reactive force component to lengthwise shrinkage includes obtaining the first data value from a third party.

8. The method of Claim 1, wherein the at least one first data value is a plurality of first data values and the at least one second data value is a plurality of second data values.

9. The method of Claim 1, wherein the wood product is selected from a group consisting of standing trees, raw logs, processed logs, processed lumber, manufactured wood products, and engineered wood products.

10. The method of Claim 1, wherein the motive force component to lengthwise shrinkage is chemical composition.

11. The method of Claim 10, wherein the second data value is a hemicellulose content measurement.

12. The method of Claim 11, wherein the second data value is a galactan content measurement of the hemicellulose content.

13. The method of Claim 10, wherein the second data value represents a ratio of galactan to glucan of the wood product.

14. The method of Claim 1, wherein obtaining the at least one second data value indicative of a motive force component to lengthwise shrinkage includes:

- a) obtaining a sample of the wood product at the measuring location; and
- b) analyzing the sample of the wood product.

15. The method of Claim 14, wherein analyzing the sample of the wood product includes conducting anion exchange chromatography on the sample.

16. The method of Claim 1, wherein the second data value indicative of a motive force component of lengthwise shrinkage is obtained by anion exchange chromatography.

17. The method of Claim 1, wherein determining the lengthwise shrinkage includes

- a) obtaining a correlation between lengthwise shrinkage and both the reactive force component to lengthwise shrinkage and the motive force component to lengthwise shrinkage for the wood product;
- b) calculating the lengthwise shrinkage by converting the first and second data values with the obtained correlation.

18. The method of Claim 1, wherein plural measuring locations are located along the wood product.

19. The method of Claim 18, wherein at least two measuring locations are separated by a predetermined distance.

20. The method of Claim 19, wherein a first or second data value is obtained at the at least two measuring locations.

21. The method according to Claim 1, wherein the at least one first data value is a plurality of first data values at a plurality of measuring locations along the wood product and the at least one second data value is a plurality of second data values at the plurality of measuring locations along the wood product, and wherein determining lengthwise shrinkage includes determining the lengthwise shrinkage of the wood product at each of the plurality of measuring locations.

22. A method for quantifying lengthwise shrinkage of wood products, comprising:

- obtaining at least one resistive force component measurement;
- obtaining at least one driving force component measurement;
- obtaining a correlation between lengthwise shrinkage and both resistive force and driving force; and
- calculating lengthwise shrinkage in the wood product based on the correlation and the resistive force component and driving force component measurements.

23. The method of Claim 22, wherein the resistive force component measurement is an acoustic measurement.

24. The method of Claim 22, wherein the driving force component measurement is a chemical composition measurement.

25. A method for quantifying lengthwise shrinkage of wood products, comprising:

obtaining a wood product;

obtaining a sound velocity measurement from the wood product at a first measuring location;

obtaining a galactan measurement from a wood product at the first measuring location; and

determining lengthwise shrinkage of the wood product based on the sound velocity measurement and the chemical composition measurement.

26. The method of Claim 25, wherein the galactan measurement is a galactan to glucan ratio.